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ABSTRACT

A theory of interest is presented, with comments on the assessment of interest in a student. The concept of interest as an affective state, elicited by certain characteristics of the material, is not sufficient, since situational factors do not seem solely responsible for making information more interesting. The educational interest theory here proposed consists of a differential sub-theory addressing inter- and intra-individual differences, an actual-genetic theory of interest-oriented behavior, and an ontogenetic sub-theory of the development and change of interest throughout life. Assessment of interest must involve all three of its components. Presented as an example of such assessment is the Study Interest Questionnaire (SIQ), which was developed to assess students' interest in their major. A copy of the SIQ is appended. (SLD)

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CONCEPTUALIZATION AND MEASUREMENT OF INTEREST

by

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1. INTRODUCTION

Interest is a psychologogical concept, which is becoming more frequent in scientific literature[1] in the U.S., Canada, as well as in Europe. The fact that as many as two symposia on interest are being held at this year's AERA seems to confirm this trend.

In our view, current research on interest can be divided into three areas: the development of interest (e.g., Gottfredson, 1981; Kasten & Krapp, 1986; Krapp & U. Schiefele, 1986; Travers, 1978), assessment of vocational interests (e.g., Walsh & Osipow, 1986), and the relationship between interest and learning (e.g., Drottz, Sjöberg, & Dahlstrand, 1984; Marton & Säljö, 1984; Nenniger, 1986, 1987; Renninger & Wozniak, 1985; U. Schiefele, 1987; U. Schiefele, Winteler, & Krapp, in press). Within the latter research area, one of the most interesting and rapidly expanding domains (in addition to the measurement of school and study-related interests, e.g., Carter, 1982; Donovan, Fronk, & Horton, 1983; Harty & Beall, 1984; Winteler & Sierwald) is the examination of the relationship between text-related interest and reading comprehension (e.g., Anderson, Shirey, Wilson, & Fielding, 1987; Asher, 1980; Hidi & Baird, 1986). Two approaches can be distinguished in this context: One focuses on the impact of an individual's topical interest on comprehension of the topic (e.g., Asher, 1980), while the other deals with interest that is elicited by the interestingness of a text. Interest is treated as a trait-like concept in the first approach and as a state in the second approach. Richard C. Anderson and Suzanne Hidi are representing the second approach, while K. Ann Renninger and we are representing the first approach in this symposium.

In a recent review article addressing the problems faced in measuring interest and the relationship between interest and achievement or learning (with special emphasis on text comprehension research), U. Schiefele & Winteler (1988) found three basic deficits of previous approaches:

(1) lack of a theoretical definition of interest,

(2) problematic procedures in measuring interest,

(3) neglect of specific, qualitative measures of cognitive achievement in favor of unspecific, quantitative measures.

Of the approximately 80 reviewed studies on school and study-related interests, 65% did not even comment on the defintion of interest and 80% briefly indicated their understanding of interest, but did not relate their definition to an existing interest theory (e.g., Cattell & Kline, 1977; Eagle, 1981; Holland, 1973, 1985; Izard, 1977; Kirkland, 1976; Travers, 1978). However, the lack of a

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[1] I am not speaking of vocational interests in this context, since this area of interest research has been predominant since the beginning of the century.

theoretical basis for the interest concept, which does not seem to prevent most researchers from measuring interest, poses methodological problems[2] (cf. U. Schiefele & Winteler, 1988). The assessment methods used are relatively heterogenous and include everything from extensive tests and questionnaires to one simple and direct question about interest in a specific topic. In many cases, it is unclear whether interest is actually being assessed, rather than attitudes or personal preferences.

Almost 70% of approximately 50 studies on the relationship between interest and learning used unspecific achievement measures (e.g. grades) to evaluate learning effects. Among the studies, which used specific achievement measures (e.g. recall ability for a certain text), only few (10%) used qualitative measures of learning achievement (e.g. the structure of acquired knowledge) or information processing (e.g. inferences; cf. Marton & Säljö, 1984; Rickheit & Srohner, 1986).

We have taken first steps toward a new approach to alleviate the deficits mentioned above[3] and will present our own studies as well as the results and thoughts of other authors in this context.

2. NEW APPROACHES TO A THEORY OF INTEREST

The concept of interest has a far-reaching history in educational psychology. For example, Arnold (1906), Dewey (1913), James (1890), and Thorndike (1935) have represented this concept in the USA, while Herbart (1806), Kerschensteiner (1922), and Lunk (1926, 1927) are representatives of interest theory in Germany. Since World War II, the many existing theoretical approaches to interest lost their significance and were forgotten. Research on interest, which managed to survive, was (and still is) methodologically oriented, while the theoretical meaning of the interest concept has been lost for the most part. However, since different research areas (e.g., text comprehension) have started to include the interest concept more often, theoretical perspectives of

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[2]One of the most fundamental problems in interest research seems to be the lack of a theoretical basis in the empirically and/or methodologically oriented interest approaches. Thus, with respect to research on vocational interests, Borgen (1986) has recently commented: "Paradoxically, there is a vast literature of interest measurement, yet there is a much larger domain of what we do not know about interests....There is no theory of vocational interests. The empiricism is blind" (p. 106). This evaluation can easily be applied to those studies on the relationship between interest and achievement analyzed by us.

[3]A separate paper has been written dealing the neglect of specific and qualitative measures as indicators for the evaluation of the impact of interest on learning and comprehension (U. Schiefele & Krapp, 1988).

interest have also regained attention. As mentioned above, current interest approaches may be divided into two different (yet partially complementary) conceptions: interest as a temporary affective state and interest as a personal disposition.

2.1 Interest as an affective state

The concept of interest as an affective state was developed especially in relation to processes associated with comprehending and learning texts. Hidi & Baird (1986), Kintsch (1980), and Schank (1979) have made the most important theoretical contributions to this concept.

Schank assumes that a certain text or sentence allows a reader to make numerous inferences[4]. The problem is explaining which mechanisms are involved in distinguishing meaningful from meaningless inferences. Schank's hypothesis is that, when reading a story for example, inferences are made on the basis of the reader's interest; i.e., inferences are based on those parts of the text which the reader finds interesting. Thus, events or expressions in a story have different interest values. In addition, Schank attempts to determine those factors, which make a story or an event interesting. He concludes that events dealing with death, danger, power, and sex have especially high interest values. In addition, the impact of such "absolute interests" depends on the unexpectedness and/or personal relevance of the facts.

Kintsch (1980) elaborated Schank's ideas by distinguishing cognitive and emotional interest. Emotional interest is created when a text involves events or topics (e.g., violence, see above) with arousal character, while cognitive interest is produced, when the content of the text deviates optimally from the reader's prior knowledge. Thus, clear parallels can be seen to Berlyne's (1960) theory of intrinsic motivation.

Schank and Kintsch as well as Hidi & Baird define interest as a temporary affective reaction, which is determined by certain features of the text. "Interestingness" describes the capacity of a text to elicit an emotional reaction (interest). Thus, these authors also conceive of interest as a state. Interestingness is assigned to interest as a corresponding stimulus or characteristic of the topic. Hidi & Baird understand interest as an affect which is formed when a person reacts to a situation of special significance. Different types of interest (e.g., emotional and cognitive interest) operate in the same way to increase

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[4]When reading a text, a person makes inferences (or conclusions) based on the information contained in a text and the person's "world" knowledge. Inferences are basic cognitive processes, without which comprehension of the text would be impossible.

certain cognitive activities, such as searching for information and making inferences, which increase a person's knowledge and understanding of certain events or of a text. However, the kind of special significance attributed to certain information may vary greatly and can thus lead to different forms of interest. Thus, dissonant information would probably elicit a feeling of surprise or novelty, which would in turn result in cognitive interest, while information related to important life themes would be more likely to elicit emotional interest.

Two cognitive theorists, Kintsch and Schank, have made the most essential contributions to a theory of text-related interest. Perhaps this is also the reason that their concept of interest, which was taken over and further developed by Hidi & Baird is not yet fully understood. Izard's (1977) interest theory might prove useful in defining interest more precisely as an affective state and differentiating it more clearly from other concepts (e.g., curiosity).

In his "differential theory of emotions" Izard (1977) distinguishes ten fundamental emotions, each with a specific neural foundation, a characteristic facial or neuromuscular expression, and a distinct subjective or phenomenological quality. Previous research has established the existence of ten different fundamental emotions in various cultures, whereby interest or interest arousal (interest is the lower and interest arousal is the higher level of intensity) is the most frequently experienced positive emotion. Interest is primarily elicited by change or novelty (cf. the "collative" stimulus characteristics according to Berlyne, 1960). One feels captured and moved by the object of interest. The interested person shows signs of attention, curiosity, and fascination. In order to determine a person's interest, Izard uses rating scales with the following adjectives: "attentive", "concentrated", and "alert".

According to Izard, interest causes much of the motivation to learn. Consequently, interest is also highly significant for the development of competence, intelligence, and creativity. Thus, Izard reports at great length on the interaction between interest and perceptive or cognitive processes. According to him, the interaction between emotion and cognition is to be expected as a rule. Behavior is determined by internal and external events, leading to neural changes and finally to emotions. Emotions, in turn, influence perception and other cognitive processes, as well as determining behavior.

In summary, one may note that although Izard gives much credit to interest, he does not offer differential support for his hypotheses. This is evident, for example, when he does not clearly distinguish interest from other similar constructs, such as curiosity, attention, and desire for knowledge and competence. In addition, Izard's arguments demonstrate that the concept of interest should not be seen only in relation to emotional, but also to motivational

theories. As mentioned above, change and novelty are the most important determinants for the experience of interest. Thus, it is not surprising that Deci & Ryan (1985) view interest, as it is conceptualized by Izard, as an epiphenomenon of intrinsic motivation.

2.2 Interest as a dispositional concept

According to the theoretical approach described above, interest is defined as an affective state, which is elicited by certain characteristics of a text. It also seems plausible, however, that situational factors are not solely responsible in making information appear more interesting and yield better learning results, but that individual interest in a particular topic codetermines how much attention the individual will pay to certain information and at what level he/she will process this information. Several studies exist in support of this assumption (c.f., Asher, 1980, Baldwin, Peleg-Bruckner, & McMlintock, 1985; Flammer, Schläfli, & Keller, 1978), but none have defined interest as a personal trait. Thus, we would like to introduce the educational interest theory developed by H. Schiefele, M. Prenzel, A. Krapp, and others (cf. Prenzel, 1988; Prenzel, Krapp, & H. Schiefele, 1986).

The educational interest theory is an attempt to integrate past as well as present theoretical approaches dealing with interest and should be seen as a theoretical framework, allowing a variety of specific research issues to be addressed. Three sub-theories make up the educational interest theory:

- The differential sub-theory addresses inter- and intraindividual differences in interest.

- The actual-genetic sub-theory analyzes actual occurring interest-oriented behvavior.

- The ontogenetic sub-theory deals with the development and change of interest throughout the course of life.

Each sub-theory promotes studies and theories, addressing either specific topics (e.g., music) or allowing general statements about interest (cf. Fink & Krapp, 1986; Kasten & Krapp, 1986; Prenzel, 1988; U. Schiefele, in press; U. Schiefele et al., in press; Walser & Schmidt-Müller, 1986; Winteler & Sierwald, 1987).

According to the educational interest theory, interest is a specific relation between a person and an object (PO-relation). Object-related actions are one reflection of this relation and are referred to as the actual PO-relation. In addition, repeated involvement with an object leads to a stable mental representation of the PO-relation (structural PO-relation). Interest, in terms of the actual PO-relation, may be seen as (structural) interest, which has actualized

through action. The structural PO-relation can be understood as the mental representation of repeated actual PO-relations.

Actual as well as structural (or enduring) interest is characterized by features in the domain of emotion (primarily positive emotions related to the object of interest or to object-related actions), value (the interest or the object of interest is at a high level in the individual hierarchy of values), and cognition (desire to acquire knowledge; see below). The main descriptive feature of interest is its "self-intentionality" (which is closely related to the emotional and value component of interest); i.e., neither interest in an object, nor actions associated with the object of interest are primarily instrumental. In Csikszenmihalyi's (1975) words, interest oriented actions are "autotelic". They do not serve to fulfill object-unrelated or extrinsic goals.

The theory introduced here is not yet fully complete. Although the definition of the emotional and value components of interest is unanimous, there is still disagreement about how to define the cognitive component. In our opinion, the cognitive component of interest represents an interested person's desire to learn more about the object of interest (as such), and thus to increase his/her knowledge of the topic. This is similar to object-specific, epistemic curiosity, which characterizes cognitive development related to a particular topic or the willingness to learn about that topic. Thus, the cognitive component of interest does not comprise a person's whole knowledge of the interest object. As such the relationship between prior knowledge and interest, which has been examined in many studies (e.g., Baldwin et al., 1985; Hare & Devine, 1983) could be resolved. At the beginning stages of interest development, there is practically no relationship between interest and object-related knowledge. During the course of development, i.e., the longer an interest exists, the object-related knowledge will increase. This means that the impact of interest on knowledge acquisition or on learning must be examined from a different perspective at different developmental stages. The longer an interest exists, the greater the learning through the combination of interest and prior knowledge. Thus, an important task for future research is to test the impact of both interest and prior knowledge on knowledge acquisition.

3. MEASUREMENT OF INTEREST

According to our model, the assessment of interest invovles all three of its components as well as the feature of self-intentionality. Thus, we began to develop a questionnaire assessing students' interest in their majors. This questionnaire was originally introduced by Winteler & Sierwald (1987) and has since been revised twice (see Winteler, Sierwald, & U. Schiefele, 1988). Table 1 depicts the most recent version of the "Study Interest Questionnaire" (SIQ).

Insert Table 1 here

Factor analysis (N = 621) of the SIQ yielded two factors (just as the factor analysis of an earlier version) - "interest" and "cognitive competence". Table 1 also contains the factor loadings as well as the different characteristics of interest.

The results of the factor analysis confirm that object-related emotion and value are integrated components of one construct. In addition, the self-assessed level of knowledge seems to be an independent factor, which correlates only moderately with the actual interest factor (r = .30; N = 621). Perhaps interest and study-related knowledge are only weakly correlated, since knowledge acquired during one's studies is not primarily motivated by interest, but by other motives. This result supports our above argumentation according to which the object-related knowledge level is not part of, but a possible result of interest. Thus, it is indicated in what directions revision of the SIQ must be made. It should be attempted to assess the tendency or the willingness to acquire knowledge about the object of interest.

An additional deficit of the SIQ is that the emotional component of interest is underestimated in comparison to the value component. This was not our intention, but the consequence of the item selection, which resulted from the reliability and factor analyses.

Table 2 summarizes the results of the reliability check of the SIQ.

Insert Table 2 here

Table 3 contains the intercorrelations between the SIQ scales and the "Achievement Motive Scales" (AMS) by Gjesme and Nygard (1970). It can be seen that interest as assessed by the SIQ correlates only moderately with the AMS-scales. A factor analysis of the AMS scale yielded three factors: hope for success in new, i.e., unknown and difficult situations (e.g., "I like problems, which I'm not sure I'll be able to solve"), hope for success in familiar situa-

tions, i.e., situations in which one's abilities are likely to be reinforced (e.g., "I like situations which let me see how well I can do"), and fear of failure. Interestingly, the closest relationship was established between interest and hope for success in new situations.

Insert Table 3 here

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4. CONCLUSION

The theoretical and methodological developments described above leave many unanswered questions. One important problem concerns the compatibility of interest as an affective state versus a personal disposition. Especially the model of interest as an affective characteristic is confronted with the problem of separating interest from similar concepts or emotions. According to the educational interest theory, interest always involves a long-term relation to an object, while concrete object-related actions represent temporary actualizations of the enduring interest. Even interest conceived of as a temporary state is not only affective, but also contains a cognitive and a valence component. In addition, it is linked with a latent, long-term relation to an object. Thus, this concept of interest can be distinguished from concepts like attention, curiosity, or tension.

Just because the number of studies dealing with interest has increased, the clarification of the theoretical conceptualization of interest has become a matter of high priority. In order to fulfill this task, extensive discussions and theoretical analyses are needed. We hope that our considerations have provided an impetus for this.

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Table 1

Study Interest Questionnaire (SIQ)

Items[1]	Int.-comp.[2]	loadings Int[3]	loadings CC[4]
1. Preoccupying myself with the issues and problems within my major is one of my favorite activities.	W	.68	
2. Majoring in this field is of great personal importance to me.	W	.68	
3. If I had more time, I would busy myself more intensively with certain issues within my major (above and beyond those required for examinations).	S	.42	
5. Occassionally, I become so engrossed in a topic within my major that I am unaware of anything else around me.	E	.36	
6. I am certain to have chosen the major which corresponds most to my personal inclinations.	W	.63	
7. I even spend my free time on topics, which are a part of my major.	S	.55	
9. I would spend time regularly with the issues within my major even without pressure from the outside.	S	.55	
10. To be honest, I feel indifferent towards my major.	W	-.59	
12. I feel personal fulfillment through my major.	W	.60	
14. I attribute high personal value to my major.	W	.68	
15. There was never any doubt that I would study this major.	W	.49	
17. The things I really like to preoccupy myself with are not a part of my major.	E	-.67	
4. I would be able to tell you much about what we've covered in our lectures and seminars so far.	K		.50
8. As far as the requirements are concerned, I think I've acquired a good overview of the topics.	K		.65
11. Up till now, I've been able to keep up with the what we have learned.	K		.49
13. As far as my knowledge is concerned, I do not have to be afraid of comparisons with fellow students.	K		.63
16. Altogether, I can be satisfied with the knowledge I have acquired.	K		.65

Notes: [1]All items are rated on a four-step scale with one of the following ratings: "does not apply at all," "hardly applies," "mostly applies," and "completely applies." [2]Interest components: E = emotion, V = value, S = self-intentionality); [3]Int = factor "interest"; [4]CC = factor "cognitive competence".

Table 2

Description of the scales in the SIQ

	Int	CC
Number of items	12	5
Item means (difficulty)	2.18 - 3.60	2.48 - 2.95
Medium difficulty	2.78	2.65
selectivity[1]	0.35 - 0.65	0.42 - 0.55
Consistency (alpha)	0.86	0.73
Means of the scales	33.45	13.22
Standard deviation	6.05	2.24
Dispersion	15 - 48	6 - 20

Notes: [1]Correlation between single item and scale (without single item).

Table 3

Correlations among the scales of the SIQ, AMS, and achievement

	AMS-Scales					
SIQ-scales	HS	HS_F	HS_N	FF	HS/FF	ACH
Int	.27***	.12	.33***	-.18*	.28***	.22**
CC	.21**	.16*	.25***	.34***	.26**	.64***
ACH	.11	.03	.16	-.14	.15	-

Notes. *p < .05; **p < .01; ***p < .oo1; HS = hope for success; HS_F = HS in familiar situations; HS_N = HS in new situations; FF = fear of failure; ACH = achievement (self-assessed).